PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION

Improvements in or relating to Ordnance Projectiles

I, LEWIS MOTLEY, a British subject, of "Wren House," 13, North Side, Clapham Common, London, S.W.4, do hereby declare the nature of this invention to be as follows:—

This invention relates to ordnance projectiles and has for its object the provision of an improved projectile to be fired from guns or howitzers, which projectile will be particularly effective against aircraft.

The invention consists broadly of a projectile comprising a casing which is filled with a multiplicity of missiles and which is built up of a number of detachable parts adapted to separate at a given interval after projection, thereby enabling said missiles to spread. The projectile is primarily intended to be used in guns (though its use in howitzers is not excluded) and thus it will be rotating on its axis at the moment of separation of its casing parts, and the missiles therewithin will spread outwardly by centrifugal force as well as continue to move forwardly. Thus a large volume of space will be effectively traversed by the missiles.

In accordance with one embodiment of the invention the projectile is more or less in the shape of an ordinary shell, that is to say it is cylindrical with a tapered or pointed nose. Its disc-shaped base portion is made in one piece and carries the driving band. The circumferential wall of said projectile is built up of a number of longitudinally divided portions each extending from said base portion to a nose cap. At their base ends these longitudinally divided portions are connected to the base portion by hooking attachments which secure them firmly so long as their forward ends are held together, but, when said forward ends separate, permit them to detach from said base portion. Said longitudinally divided portions are held together at their forward ends by means of the nose cap which embraces their forward ends, and time fuze means are provided for forcing off said nose cap at a given time after projection. Thus when said nose cap is forced off said longitudinally divided portions will separate and detach themselves from the base portion and the missiles will spread by centrifugal force and at the same time continue to move forwardly traversing a large volume of space.

The nose cap may be streamlined with the longitudinally divided portions so that the whole projectile assumes the form of an ordinary shell.

The missiles in the casing may consist of a large number of balls, also lengths of coiled wire and any other objects calculated to damage and destroy aircraft.

The projectile is preferably of large calibre (say 12 inches or more) and will thus be able to contain a large quantity of the missiles particularly as only a very small charge will be required for removing the nose cap.

Dated this 16th day of July, 1941.

A. A. THORNTON,
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For the Applicant.

COMPLETE SPECIFICATION

Improvements in or relating to Ordnance Projectiles

I, LEWIS MOTLEY, a British subject, of "Wren House," 13, North Side, Clapham Common, London, S.W.4, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to ordnance projectiles and has for its object the provision of an improved projectile to be fired from guns or howitzers, which projectile will be particularly effective against aircraft.

The invention comprises an ordance projectile comprising a casing whose circumferential wall is built up of a plurality of separate parts divided from each other in longitudinal planes and which is packed with a multiplicity of

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detached missiles, said separate parts being adapted to separate at a given interval after projection, thereby enabling said missiles to spread.

The invention further comprises an ordnance projectile comprising a casing containing a multiplicity of detached missiles and built up of a base element at its rear end, a nose element at its forward end and a plurality of longitudinally divided separate parts forming the circumferential wall of the casing and extending between said base and nose elements by which they are held together, the arrangement being such that, at a given interval after projection a small bursting charge forces said nose element forwardly from the front ends of said separate parts, and, upon said separate parts consequently commencing to spread at their front ends their rear ends liberate themselves from the base element.

In order that the invention may be the more clearly understood a projectile in accordance therewith will now be described, reference being made to the accompanying drawings, wherein:—

Figure 1 is a sectional side elevation of said projectile ready for firing.

Figure 2 is a cross section on line II—II of Figure 1.

Figure 3 is a similar view of the same with its parts in process of separating while in the air.

Referring to these drawings it will be seen that the projectile casing is more or less in the shape of an ordinary shell, that is to say it is cylindrical with a tapered or pointed nose. Said projectile casing comprises a one-piece base cap 1 at its rear end and a one-piece nose cap 2 at its front end, and the circumferential wall of said casing is built up of a number of longitudinally divided portions 3 extending between, and held together by, said base cap and nose cap. The nose cap 2 is adapted to be forced forwardly from engagement with the front ends of said wall portions 3 by means of a light separating charge 4 just behind it which is exploded by a time fuze a given time interval after firing, and the connection between the rear ends of said portions 3 and the base cap 1 is such that as soon as said wall portions commence to spread at their front ends, consequent upon the nose cap being forced off, they liberate themselves from said base cap so that the whole projectile is now separated into its component parts of nose cap, base cap and longitudinal wall portions. The casing is packed with missiles in the form of hexagon section rods 5 and these, as soon as the casing separates as stated, spread together with the wall portions by virtue of the centrifugal force arising from the spinning of the projectile. At the same time the base cap, nose cap, wall portions and hexagon rods continue to move forward and a large volume of space is traversed.

In construction, as will be clear from the drawings, the wall portions 3 have forward extremities 3*a* which are turned parallel to the axis of the projectile so as to form a straight cylindrical front edge to the circumferential wall as a whole. The nose cap 2 is formed with a corresponding annular recess in its rear surface into which the said cylindrical front edge of said wall fits with a forced fit which is strong enough to ensure the projectile remaining intact during ordinary handling but which is unable to resist the force of explosion of the separating charge 4.

The rear ends 3*b* of said wall portions 3 are turned at an angle outwardly at least as to their outer surface, and are cut away as indicated at 3*c* so that V-shaped spaces are formed between them. The forward portion of the circumferential wall of the base cap 1 is formed as shown with a coned inner surface corresponding to the outer surface of said rear ends 3*b*, and which surrounds said rear ends so that while said wall portions 3 are in assembled relation they and the base cap cannot be pulled apart. As soon as the wall portions 3 commence to spread at their forward ends consequently upon the removal of the nose cap 2, the position shown in Figure 3 is attained and the rear ends 3*b* of said wall portions are turned inwardly to an angle which enables them to separate from the base cap. As before stated therefore the projectile separates into its component parts and the rods 5 are liberated. It will be observed that, owing to the rear ends 3*b* being cut away at 3*c* they are able to be turned inwardly as stated.

The rods 5 when packed in the projectile will be sufficient to prevent inward displacement of any of the wall portions 3. A diaphragm member 6 keeps the rods 5 from extending into the space between the ends 3*b*. Otherwise the rods might prevent the said ends from moving inwards to the position of Figure 3.

Instead of the rods 5 the missiles in the casing could consist of a large number of balls, also lengths of coiled wire and any other objects calculated to damage and destroy aircraft.

The projectile is preferably of large calibre (say 12 inches or more) and will thus be able to contain a large quantity of the missiles particularly as only a very small charge will be required for removing the nose cap.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An ordnance projectile comprising a casing whose circumferential wall is built up of a plurality of separate parts divided from each other in longitudinal planes and which is packed with a multiplicity of detached missiles, said separate parts being adapted to separate at a given interval after projection, thereby enabling said missiles to spread.

2. An ordnance projectile according to claim 1 wherein the separation is effected by a small bursting charge.

3. An ordnance projectile according to claim 1 or 2, wherein said projectile casing comprises a base element at its rear end and a nose element at its forward end, and said separate parts forming the circumferential wall extend between, and are held together by, said base and nose elements.

4. An ordnance projectile according to claims 2 and 3, wherein said bursting charge forces said nose element forwardly from the front ends of said separate parts, and upon said separate parts consequently commencing to spread at their front ends, their rear ends liberate themselves from the base element.

5. An ordnance projectile comprising a casing containing a multiplicity of detached missiles and built up of a base element at its rear end, a nose element at its forward end and a plurality of longitudinally divided separate parts forming the circumferential wall of the casing and extending between said base and nose elements by which they are held together, the arrangement being such that, at a given interval after projection a small bursting charge forces said nose element forwardly from the front ends of said separate parts, and, upon said separate parts consequently commencing to spread at their front ends, their rear ends liberate themselves from the base element.

6. An ordnance projectile according to claim 4 or 5, wherein said separate parts have forward extremities which are turned parallel to the axis of the projectile so as to form a straight cylindrical front edge, and the nose cap is formed with a corresponding recess which fits with said cylindrical front edge, said nose cap being capable of being forced forwardly from said cylindrical front edge by said separating charge.

7. An ordnance projectile according to claim 4, 5 or 6, wherein the rear extremities of said wall portions are turned at an angle outwardly, at least as to their outer surface, so as to form an expanding rear end, and the circumferential wall of the base cap is formed with a corresponding contracting inner surface which surrounds said expanding rear end, so that said wall portions and the base cap cannot separate while said wall portions are in assembled relation but can separate when the outer ends of said wall portions are spread.

8. An ordnance projectile according to any of the preceding claims and for use in rifled guns, wherein the spreading of the separate parts of the circumferential wall and of the missiles is aided by the centrifugal force consequent upon the spinning of the projectile.

9. An ordnance projectile according to any of the preceding claims wherein the missiles within the casing are packed so as to prevent inward displacement of any of said separate parts of the circumferential wall.

10. An ordnance projectile according to any of the preceding claims, wherein the missiles take the form of longitudinally disposed hexagonal section rods.

11. An ordnance projectile according to any of the preceding claims, wherein the projectile is of large calibre, say 12 inches or more.

12. An ordnance projectile substantially as herein described with reference to the accompanying drawings.

Dated this 16th day of July, 1942.

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For the Applicant.

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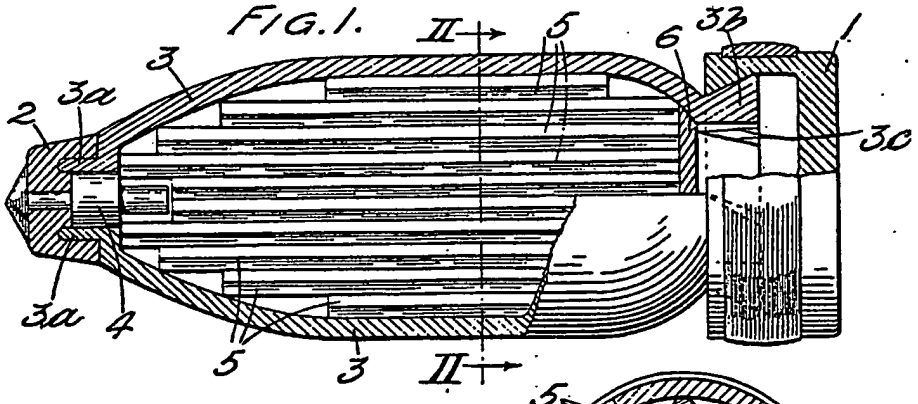

FIG. 1.

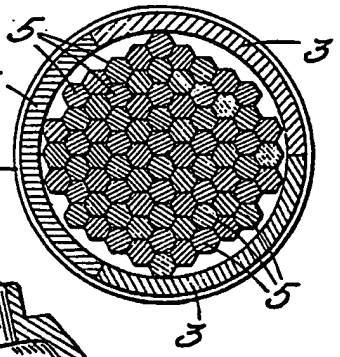

FIG. 2.

FIG. 3.

[This Drawing is a reproduction of the Original on a reduced scale.]

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